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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,385	02/19/2004	John L. Sokol	16869-003001	6434

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EXAMINER

PAPE, ZACHARY

ART UNIT	PAPER NUMBER
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2835

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/783,385

Applicant(s)

SOKOL ET AL. 

Examiner

Zachary M. Pape

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2835

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/13/04; 7/1/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 3 recites, "the encased electronic device includes a plurality of heat-producing elements; and the one or more conduction pathways thermally couple the plurality of heat-producing elements to the thermal ground" which is already described in independent claim 1. It is recommended that the applicant remove the redundant limitations from the claim. The subsequent recitation, "whereby the heat removal system requires only one heat dissipation element to remove from the encased electronic device heat produced by the plurality of heat producing elements" has been given full patentable weight per the rejection below.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-12, and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Koors et al. (US 6,180,436).

With respect to claim 1, Koors et al. teaches a system for removing heat, comprising: one or more conduction pathways (Between the chips 12 and the fins 28); a thermal ground (26), wherein the one or more conduction pathways thermally couple one or more heat-producing elements (12) of an encased electronic device to the

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thermal ground so that the thermal ground receives heat produced by the heat-producing elements, and a heat dissipation element (20, 28), wherein the heat dissipation element is thermally coupled to the thermal ground and is configured to transfer heat from the thermal ground to an environment external to the encased electronic device, and wherein the conduction pathways and the heat dissipation element provide a capacity to remove heat from the encased electronic device such that heat removal by convection from the heat-producing elements is not required.

With respect to claim 2, Koors et al. further teaches that the system does not require the use of a fan to remove heat from the encased electronic device (Since Koors et al. is silent as to a fan, the system does not require a fan).

With respect to claim 3, Koors et al. teaches a system for removing heat that requires only one heat dissipation element (Comprising 20 and 28) to remove from the encased electronic device heat produced by a plurality of the heat-producing elements (12).

With respect to claim 4, Koors et al. further teaches that the thermal ground (26) and the heat dissipation element (20, 28) are integrated (As illustrated in Fig 1).

With respect to claim 5, Koors et al. further teaches that the electronic device is a computer encased in a thermally conductive casing (14); the heat-producing elements of the computer include any combination of a central processing unit (Column 1, Lines 18-60), one or more PC cards, one or more disk drives, and one or more power supplies; the thermal ground is a thermally conductive plate situated inside the encased

computer (As illustrated in Fig 1); and the heat dissipation element includes the thermally conductive casing of the computer (As illustrated in Fig 1).

With respect to claim 6, Koors et al. further teaches that the thermal ground provides structural support (As illustrated in Fig 1, the thermal ground 26 provides at least a little support to the overall structure).

With respect to claim 7, Koors et al. further teaches that the thermal ground is one of a plate, a rod, a sphere, a pyramid, and a block (As illustrated in Fig 1).

With respect to claim 8, Koors et al. further teaches that the thermal ground is made of any combination of aluminum, copper, anisotropic graphite fiber composites and nano-tube graphite (Column 3, Lines 20-30).

With respect to claim 9, Koors et al. further teaches that the thermal ground includes active thermonic elements (Since the thermal ground is made of aluminum, and aluminum is both thermal, and an element, the thermal ground includes active thermonic elements).

With respect to claim 10, Koors et al. further teaches that the heat dissipation element is configured to remove heat from the thermal ground by any combination of natural convection, forced convection, conduction, and radiation.

With respect to claims 11 and 12, Koors et al. further teaches that the heat dissipation element includes features (28) situated and configured to dissipate heat by natural convection to the environment external to the encased electronic device (Column 3, Lines 10-12).

With respect to claim 14, Koors et al. further teaches that at least one of the one or more conduction pathways is provided by a thermal connector (32).

With respect to claim 15, Koors et al. further teaches an insulation casing (32) configured to attach to at least one of the heat-producing elements (As illustrated in Fig 1) and reduce heat transfer by convection from the at least one heat-producing element to the environment inside the encased electronic device.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Koors et al. in view of Brzezinski (US 5,323,292).

With respect to claim 13, Koors et al. teaches the limitations of claim 1 above but fails to teach that the heat dissipation element includes a conduit thermally coupled to the thermal ground and through which a coolant can flow. Brzezinski teaches a heat dissipation with a thermal ground (56) which includes a conduit (58) thermally coupled to the thermal ground and through which a coolant can flow (Column 5, Lines 29-31). It would have been obvious to one of ordinary skill in the cooling art at the time the invention was made to combine the teachings of Brzezinski with the teachings of Koors

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et al. to provide an efficient heat transfer path from the chips to the first heat sink (Brzezinski; Column 5, Lines 64-68).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 6,771,507; US 5,608,610; US 2005/0168941 all further teach systems for removing heat.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachary M. Pape whose telephone number is 571-272-2201. The examiner can normally be reached on Mon. - Thur. & every other Fri. (8:00am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynn Feild can be reached at 571-272-2092. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



**ANATOLY VORTMAN
PRIMARY EXAMINER**